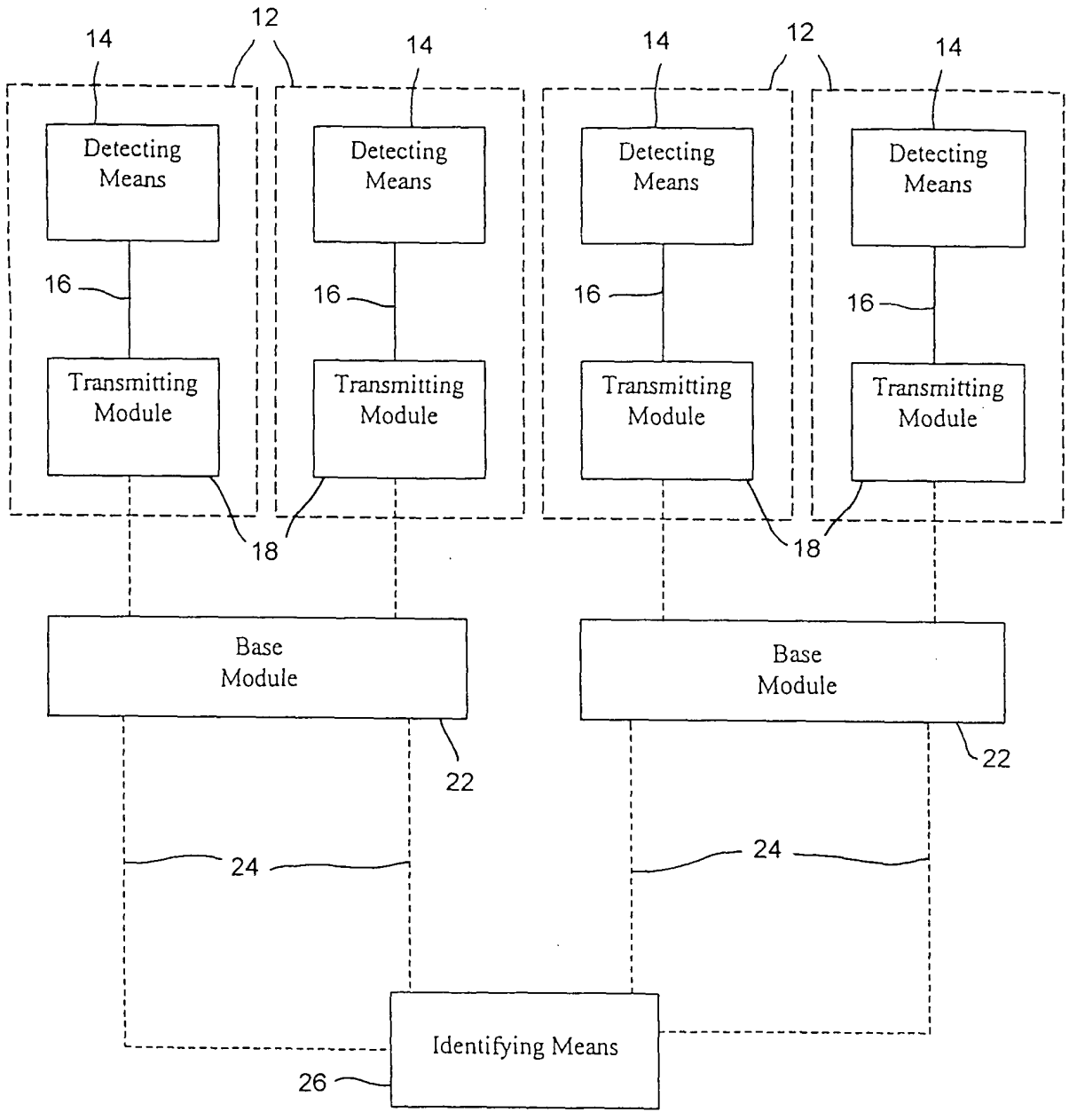
12
14
Detecting Means
16
Transmitting Module
18
Base Module
22
24
Identifying Means
26

FIG. 1

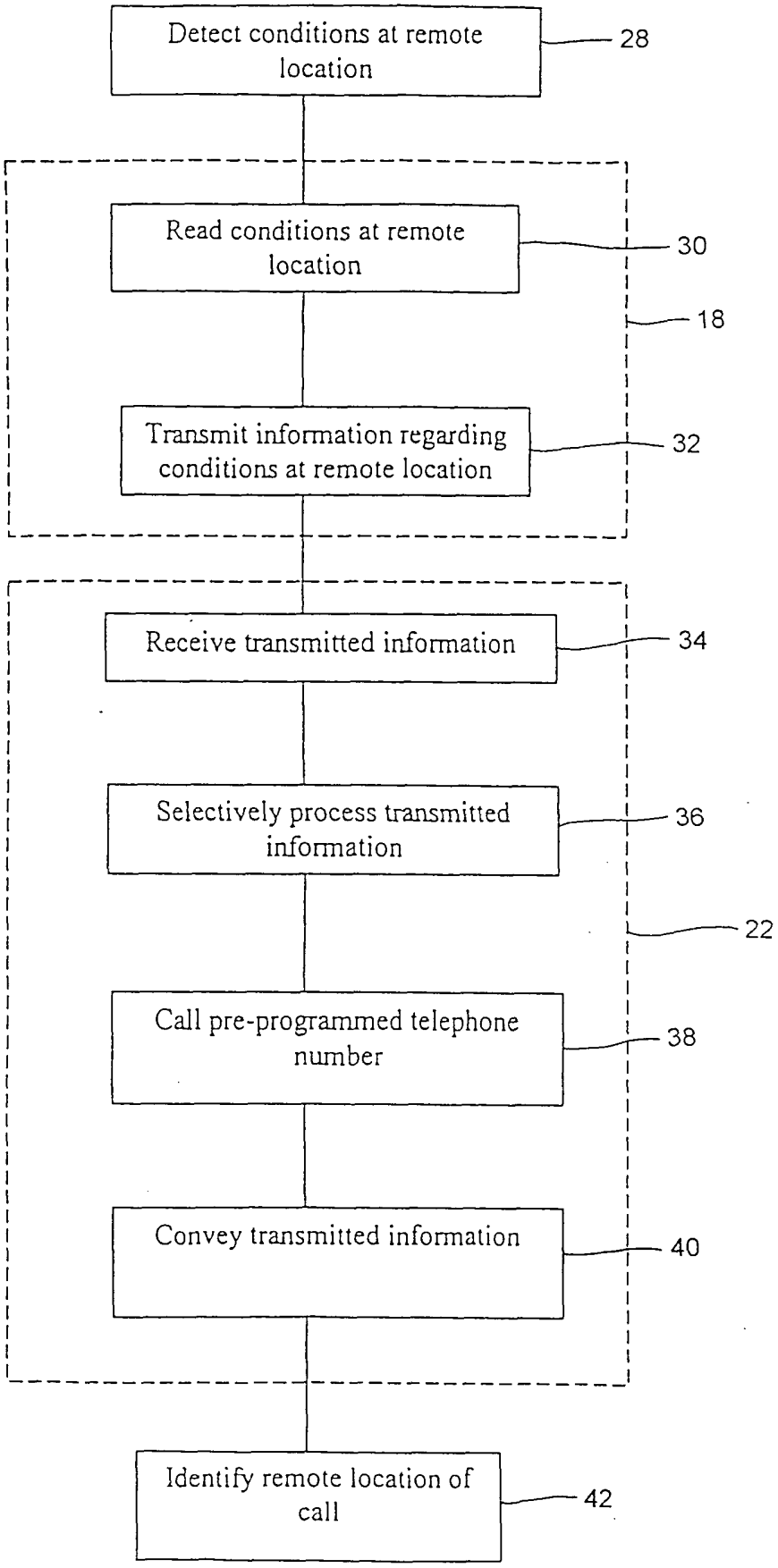
Detect conditions at remote location
28
Read conditions at remote location
30
18
Transmit information regarding conditions at remote location
32
Receive transmitted information
34
Selectively process transmitted information
36
22
Call pre-programmed telephone number
38
Convey transmitted information
40
Identify remote location of call
42

FIG. 2

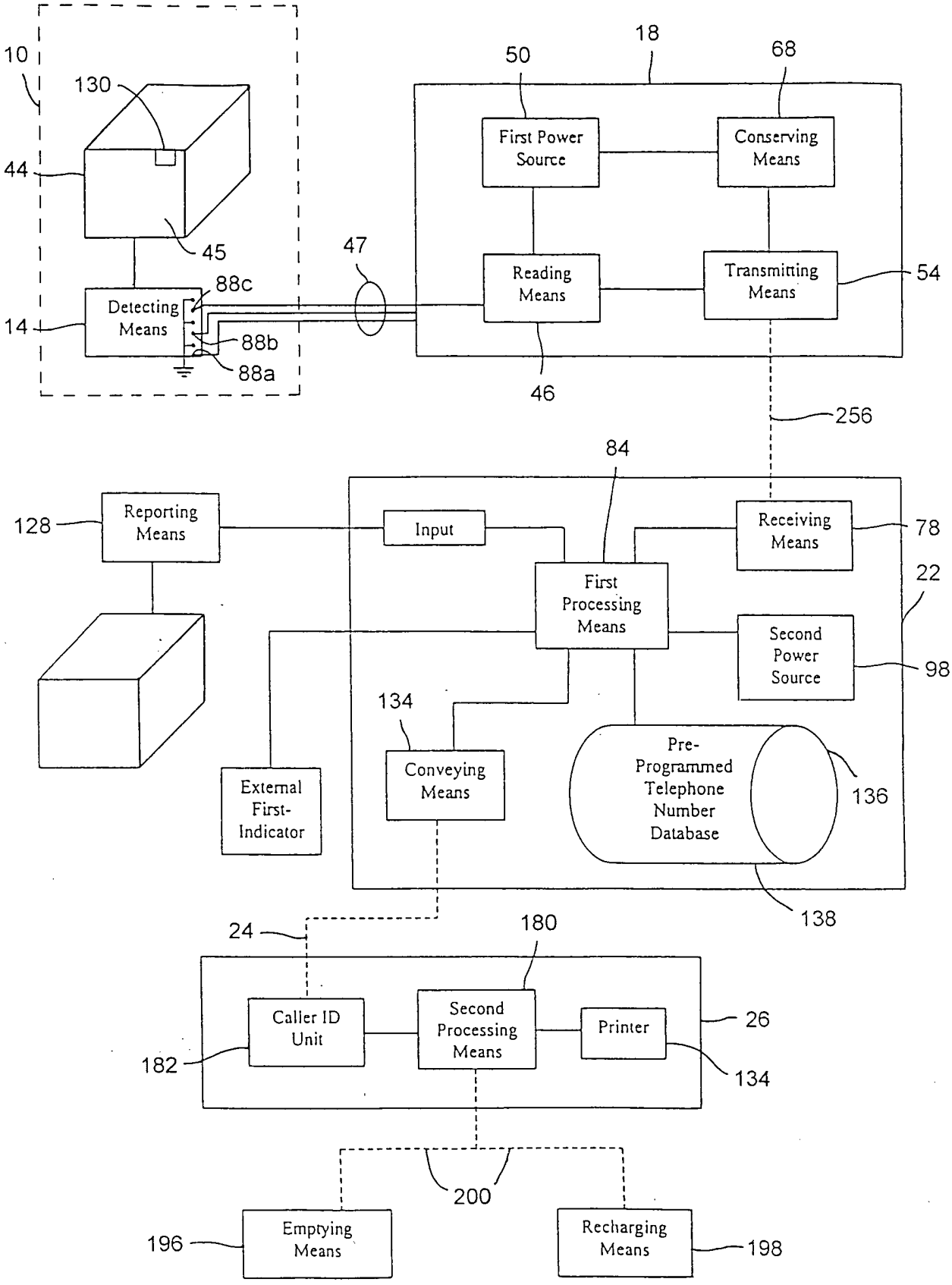
10
130
44
45
47
88c
88b
88a
14
Detecting Means
18
50
68
First Power Source
Conserving Means
Reading Means
Transmitting Means
54
46
256
84
128
Reporting Means
Input
Receiving Means
78
22
First Processing Means
Second Power Source
98
134
Conveying Means
Pre-Programmed Telephone Number Database
136
External First-Indicator
138
24
180
Caller ID Unit
Second Processing Means
Printer
26
182
134
200
196
Emptying Means
Recharging Means
198

FIG. 3

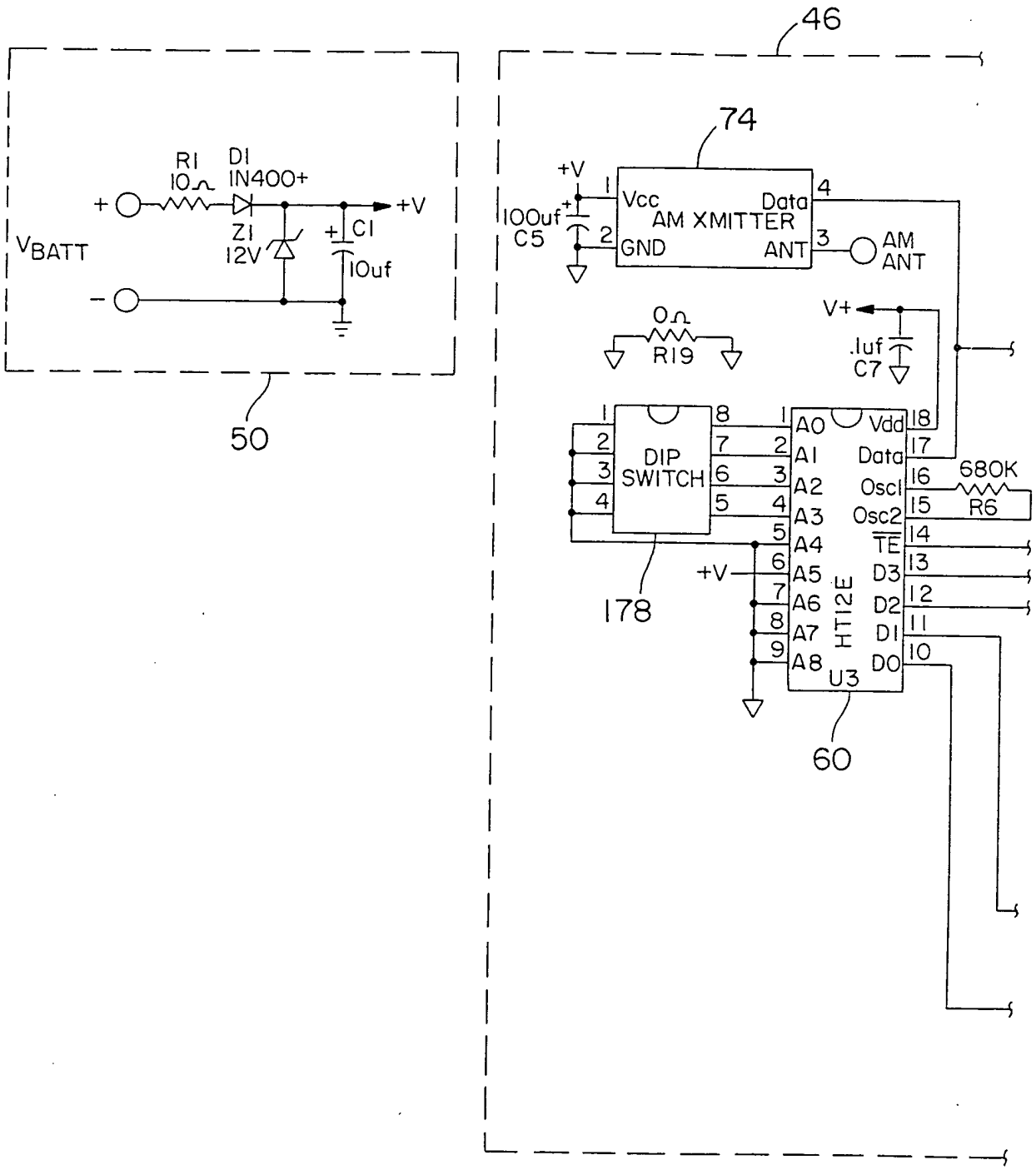
46
74
+V
100uf
C5
Vcc
AM XMITTER
Data
GND
ANT
AM
ANT
0Ω
R19
V+
.1uf
C7
DIP
SWITCH
178
A0
A1
A2
A3
A4
A5
A6
A7
A8
Vdd
Data
Oscl
Osc2
TE
D3
D2
D1
D0
HT12E
U3
60
680K
R6
R1
10Ω
D1
IN400+
Z1
12V
C1
10uf
VBATT
50

FIG. 3A-1

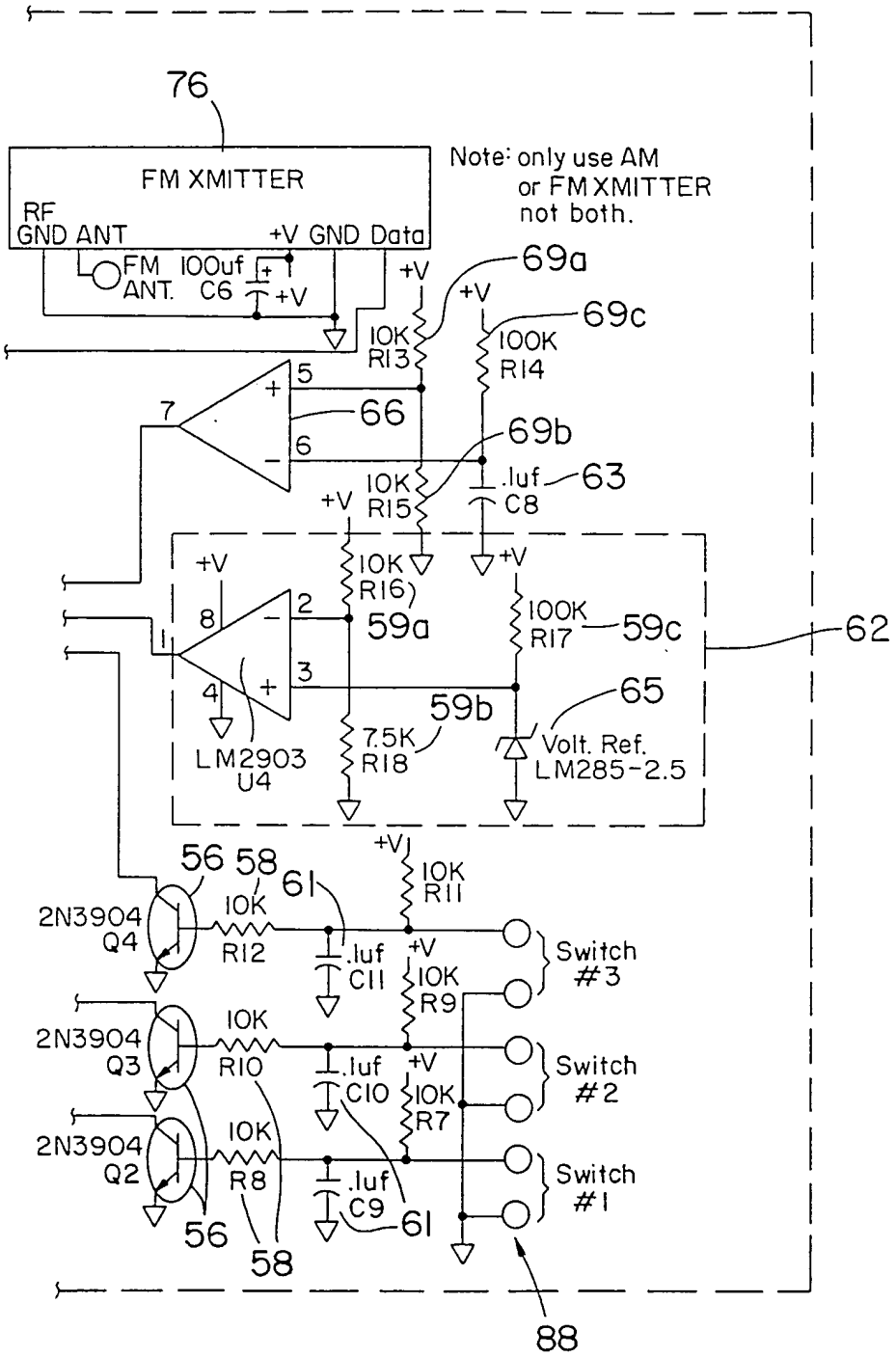
76
FM XMITTER
RF
GND ANT
+V GND Data
FM ANT.
100uf C6
Note: only use AM or FM XMITTER not both.
69a
69c
10K R13
100K R14
66
69b
10K R15
.luf C8
63
10K R16
59a
100K R17
59c
62
65
59b
7.5K R18
Volt. Ref. LM285-2.5
LM2903 U4
56
58
61
2N3904 Q4
10K R12
.luf C11
10K R11
Switch #3
2N3904 Q3
10K R10
.luf C10
10K R9
Switch #2
2N3904 Q2
10K R8
.luf C9
10K R7
Switch #1
88

FIG. 3A-2

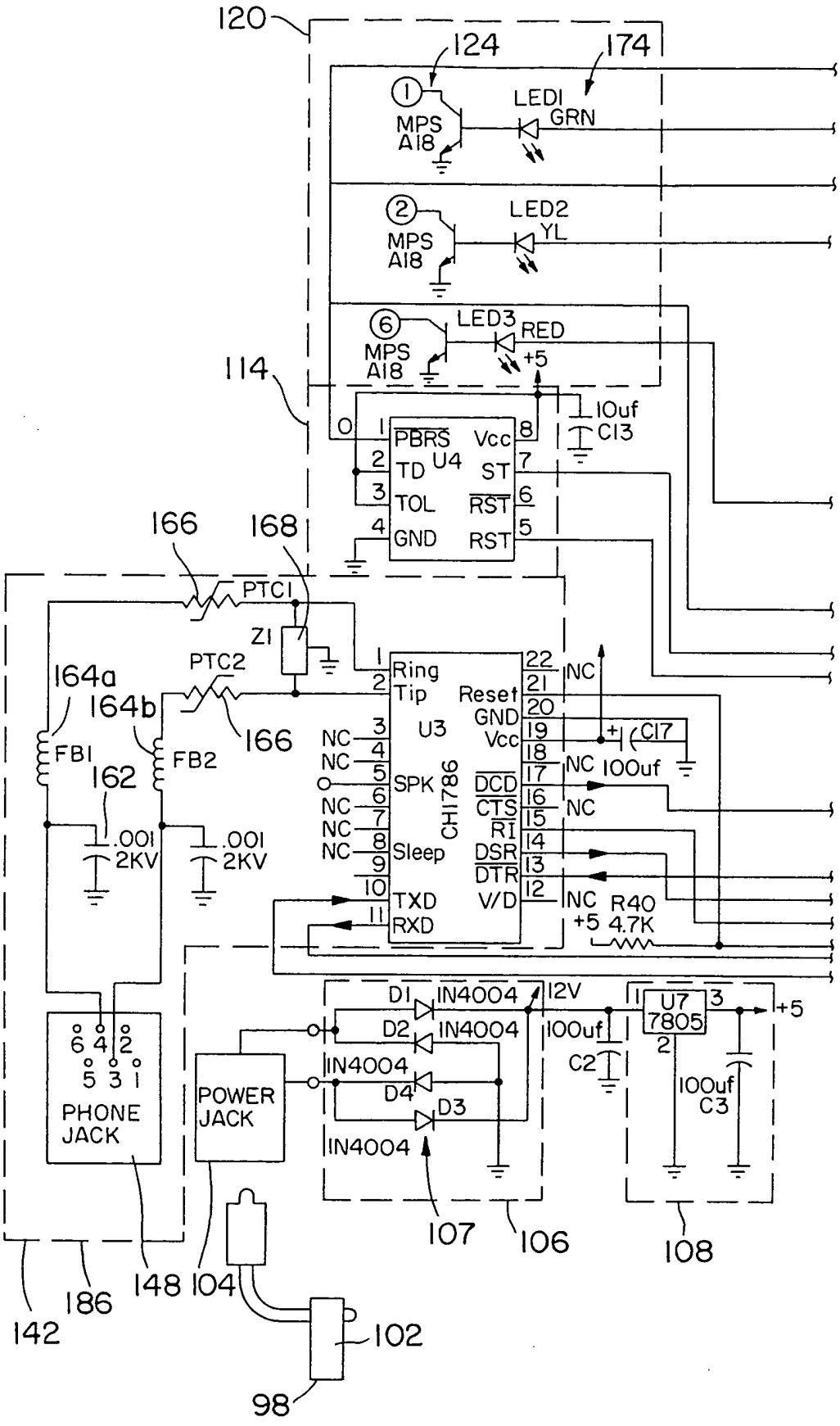
120
124
174
LED1
GRN
MPS A18
LED2
YL
LED3
RED
+5
114
10uf
C13
PBRS
Vcc
TD
U4
ST
TOL
RST
GND
166
168
PTC1
Z1
PTC2
164a
164b
FB1
FB2
162
.001
2KV
Ring
Tip
Reset
GND
Vcc
U3
CH1786
SPK
Sleep
TXD
RXD
NC
C17
100uf
DCD
CTS
RI
DSR
DTR
V/D
R40
4.7K
D1
D2
D4
D3
IN4004
12V
U7
7805
C2
C3
6 4 2
5 3 1
PHONE JACK
POWER JACK
107
106
108
142
186
148
104
102
98

FIG. 3B-1

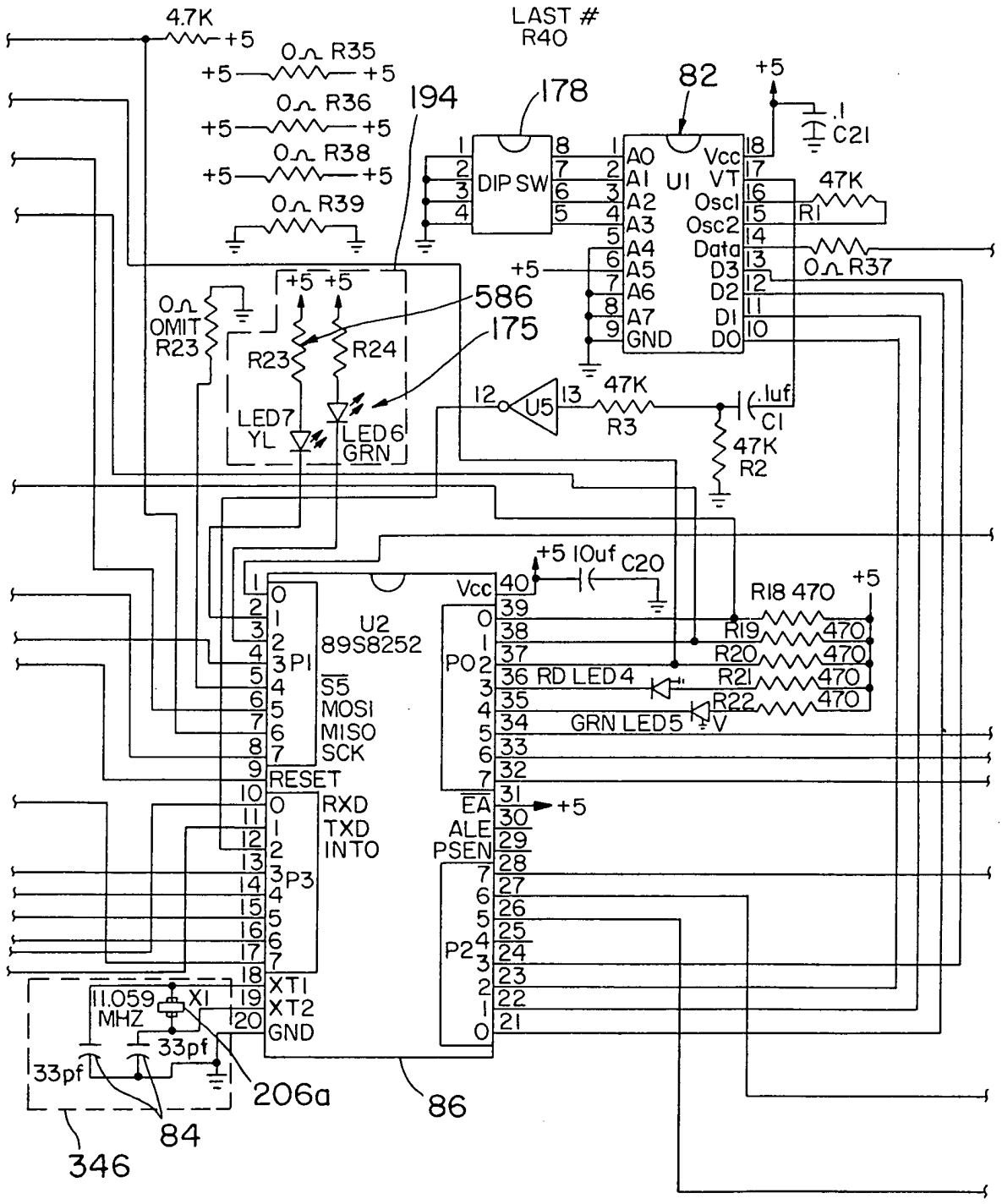
4.7K
+5
0Ω R35
0Ω R36
0Ω R38
0Ω R39
LAST #
R40
194
178
82
DIP SW
U1
Vcc
VT
Oscl
Osc2
Data
D3
D2
D1
D0
GND
A0
A1
A2
A3
A4
A5
A6
A7
.1
C21
47K
R1
0Ω R37
586
175
0Ω
OMIT
R23
R24
LED7
YL
LED6
GRN
U5
47K
R3
.1uf
C1
47K
R2
+5 10uf
C20
R18 470
R19 470
R20 470
R21 470
R22 470
RD LED4
GRN LED5
U2
89S8252
P1
P3
P2
P0
RESET
RXD
TXD
INTO
EA
ALE
PSEN
XT1
XT2
GND
11.059
MHZ
X1
33pf
206a
86
84
346

FIG. 3B-2

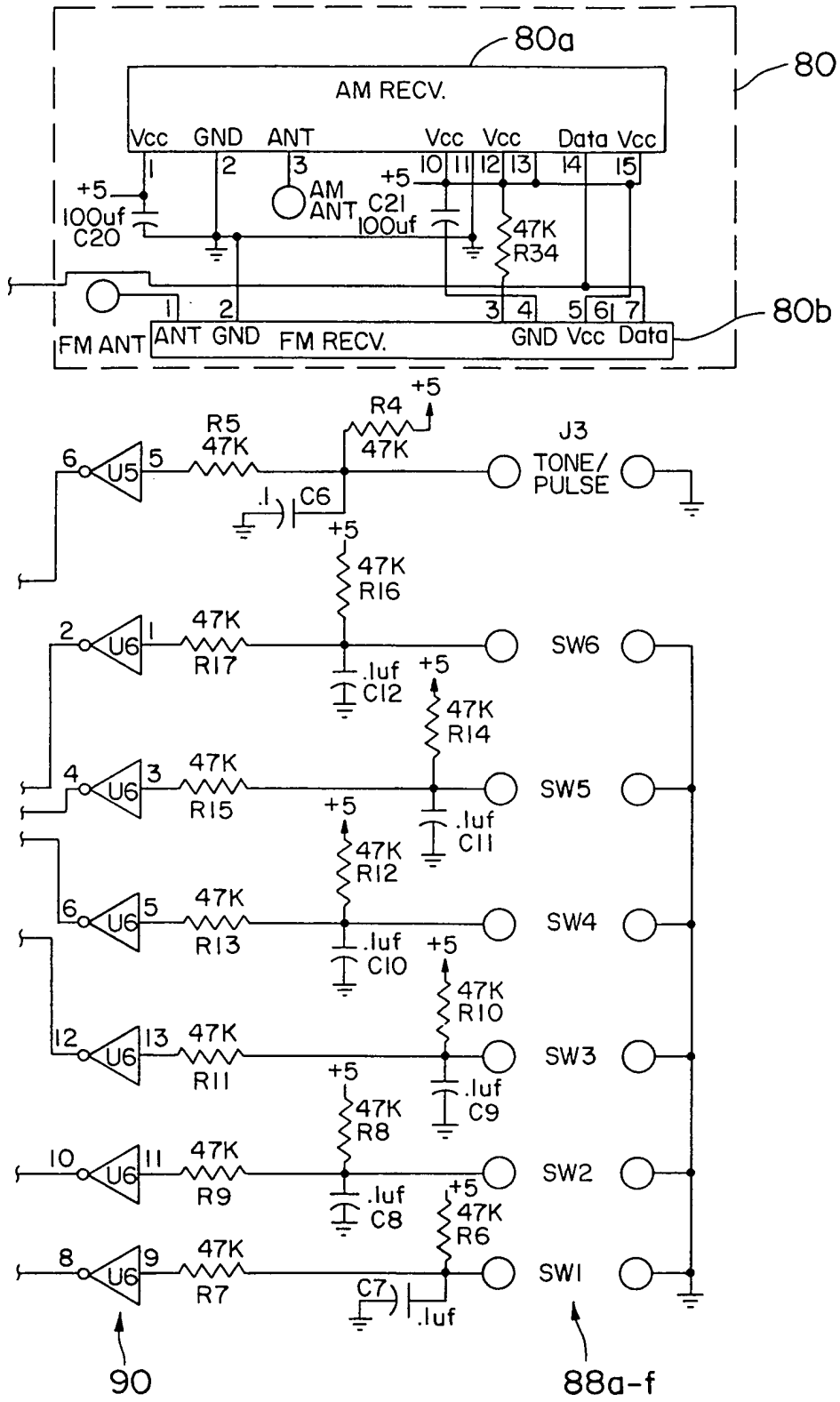
80a
80
AM RECV.
Vcc GND ANT Vcc Vcc Data Vcc
1 2 3 10 11 12 13 14 15
+5
100uf C20
AM ANT
+5
C21 100uf
47K R34
1 2 3 4 5 6 7
FM ANT
ANT GND FM RECV.
GND Vcc Data
80b
+5
R4 47K
R5 47K
J3 TONE/ PULSE
6 U5 5
.1 C6
+5
47K R16
2 U6 1 47K R17
.luf C12
+5
47K R14
SW6
4 U6 3 47K R15
+5
.luf C11
SW5
47K R12
6 U6 5 47K R13
.luf C10
+5
47K R10
SW4
12 U6 13 47K R11
+5
.luf C9
SW3
47K R8
10 U6 11 47K R9
.luf C8
+5
47K R6
SW2
8 U6 9 47K R7
C7 .luf
SW1
90
88a-f

FIG. 3B-3

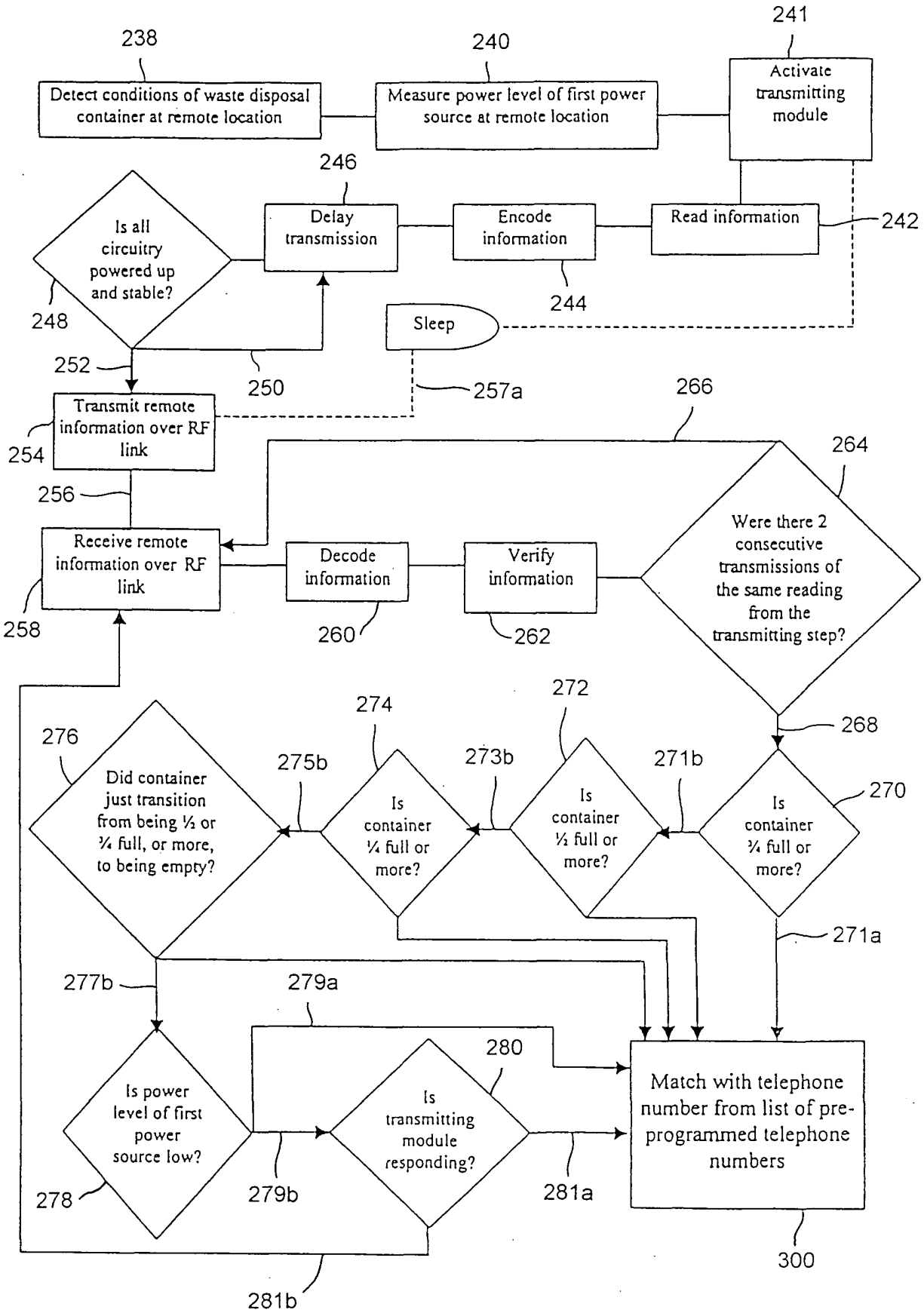
238
Detect conditions of waste disposal container at remote location
240
Measure power level of first power source at remote location
241
Activate transmitting module
246
Delay transmission
Encode information
Read information
242
Is all circuitry powered up and stable?
248
244
Sleep
252
250
257a
Transmit remote information over RF link
254
266
264
256
Receive remote information over RF link
Decode information
Verify information
Were there 2 consecutive transmissions of the same reading from the transmitting step?
258
260
262
274
272
276
275b
273b
271b
268
270
Did container just transition from being ½ or ¼ full, or more, to being empty?
Is container ¼ full or more?
Is container ½ full or more?
Is container ¾ full or more?
271a
277b
279a
280
Is power level of first power source low?
Is transmitting module responding?
Match with telephone number from list of pre-programmed telephone numbers
278
279b
281a
300
281b

FIG. 4A

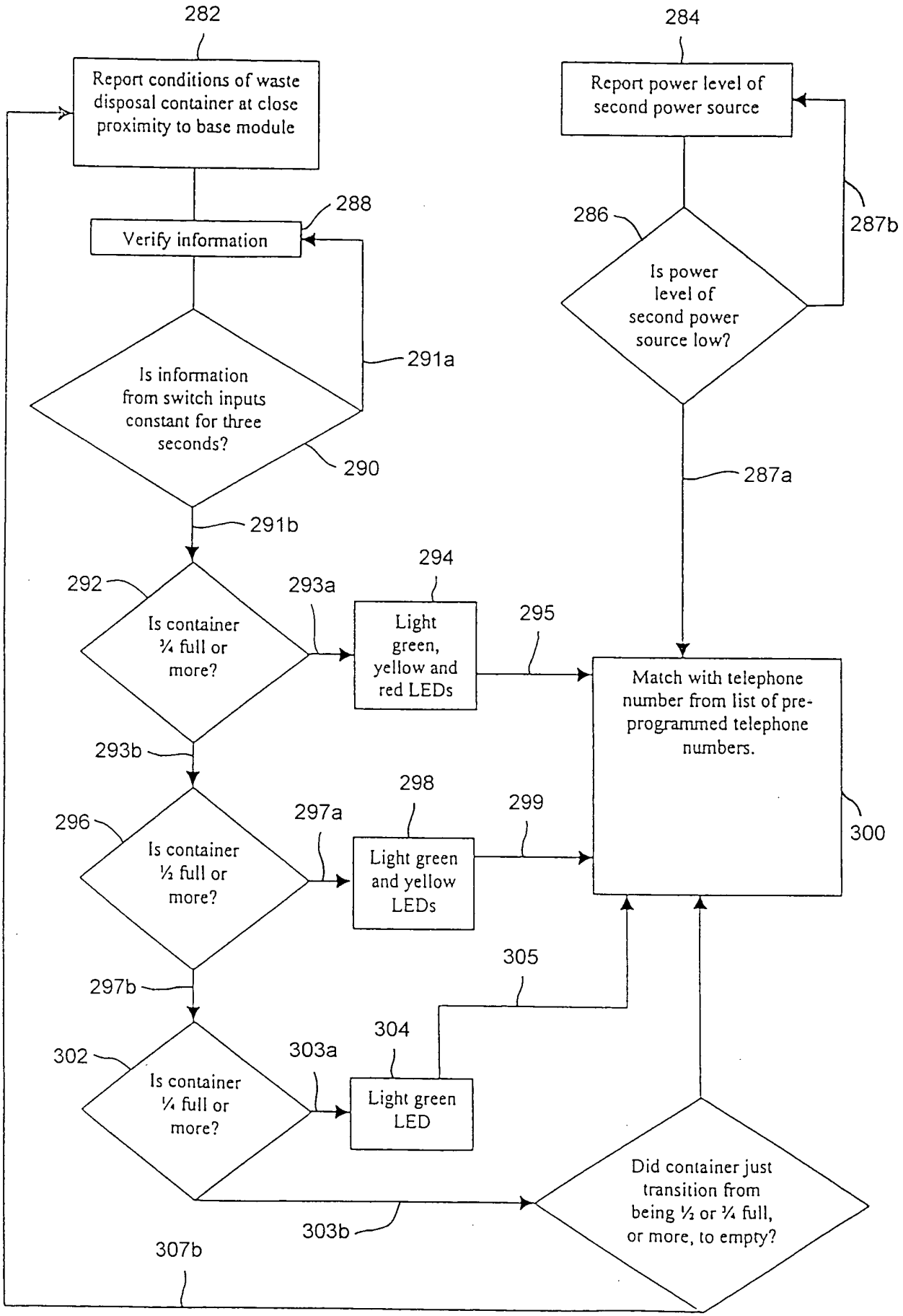
282
Report conditions of waste disposal container at close proximity to base module
284
Report power level of second power source
288
Verify information
286
Is power level of second power source low?
287b
Is information from switch inputs constant for three seconds?
291a
290
287a
291b
294
292
293a
Is container ¼ full or more?
Light green, yellow and red LEDs
295
Match with telephone number from list of pre-programmed telephone numbers.
300
293b
298
296
297a
299
Is container ½ full or more?
Light green and yellow LEDs
305
297b
304
302
303a
Is container ¼ full or more?
Light green LED
Did container just transition from being ½ or ¼ full, or more, to empty?
303b
307b

FIG. 4B

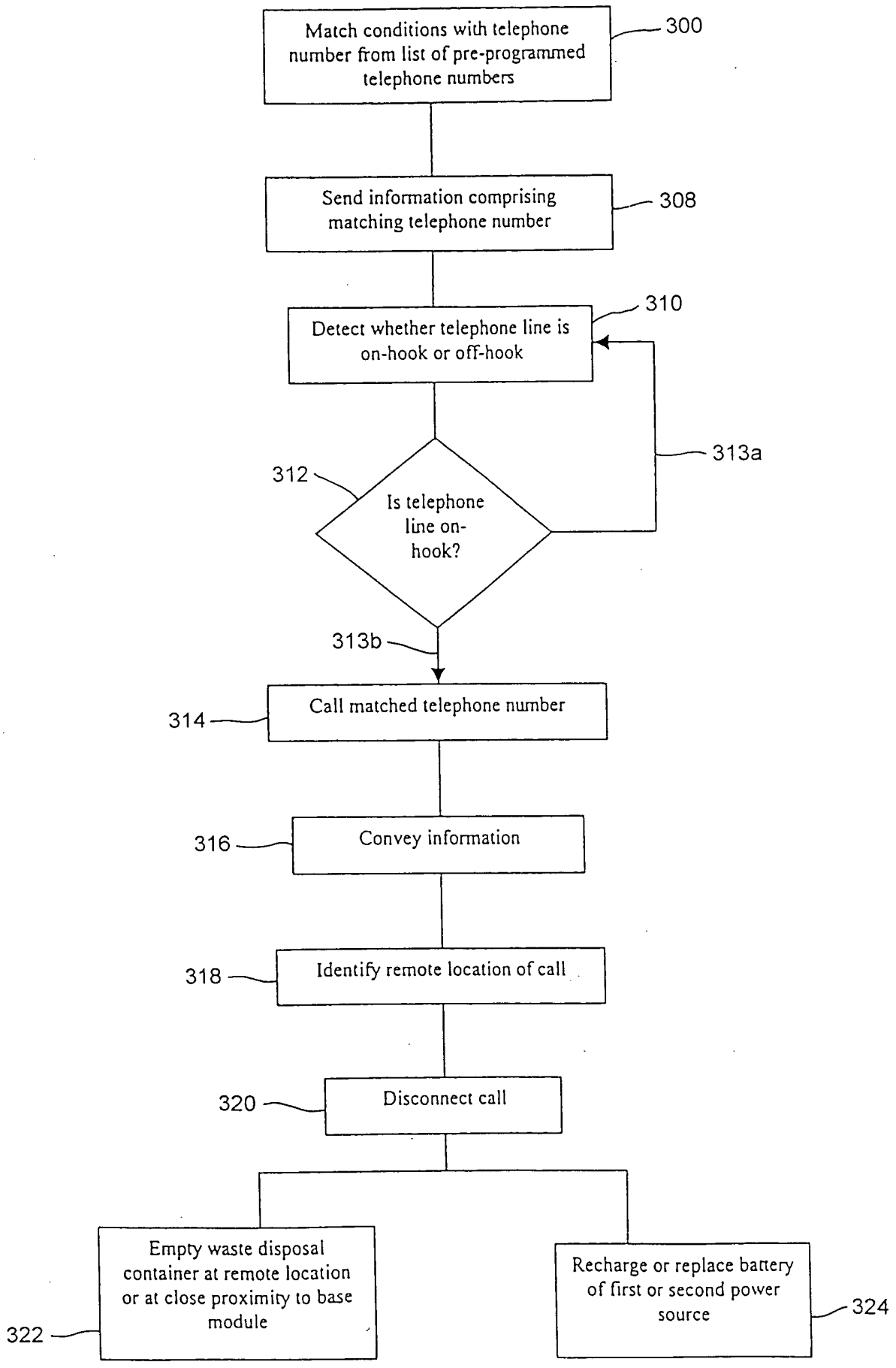
Match conditions with telephone number from list of pre-programmed telephone numbers
300
Send information comprising matching telephone number
308
Detect whether telephone line is on-hook or off-hook
310
313a
312
Is telephone line on-hook?
313b
Call matched telephone number
314
Convey information
316
Identify remote location of call
318
Disconnect call
320
Empty waste disposal container at remote location or at close proximity to base module
322
Recharge or replace battery of first or second power source
324

FIG. 4C

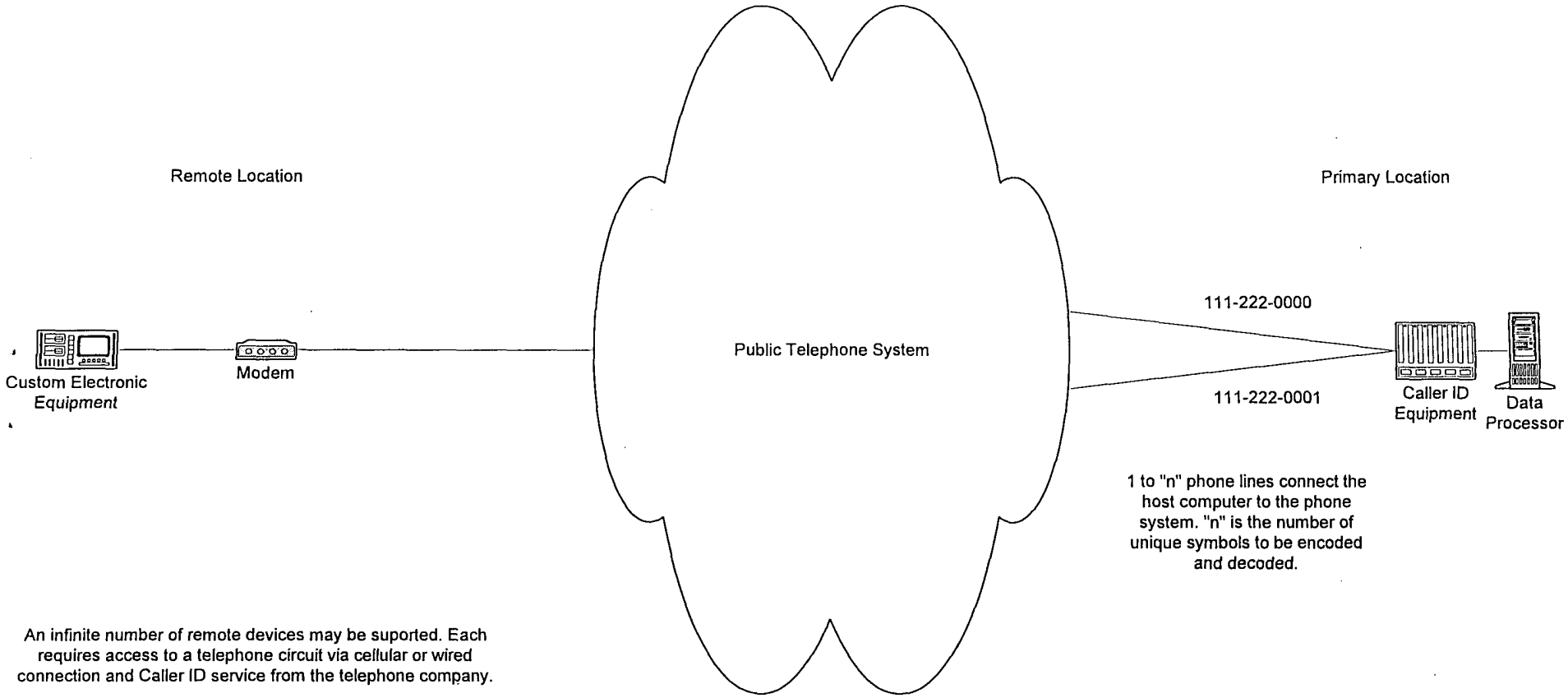
Remote Location
Primary Location
Custom Electronic Equipment
Modem
Public Telephone System
111-222-0000
111-222-0001
Caller ID Equipment
Data Processor
1 to "n" phone lines connect the host computer to the phone system. "n" is the number of unique symbols to be encoded and decoded.
An infinite number of remote devices may be suported. Each requires access to a telephone circuit via cellular or wired connection and Caller ID service from the telephone company.

FIG. 5

Flowchart depicting a remote transmitting a single element of a message.

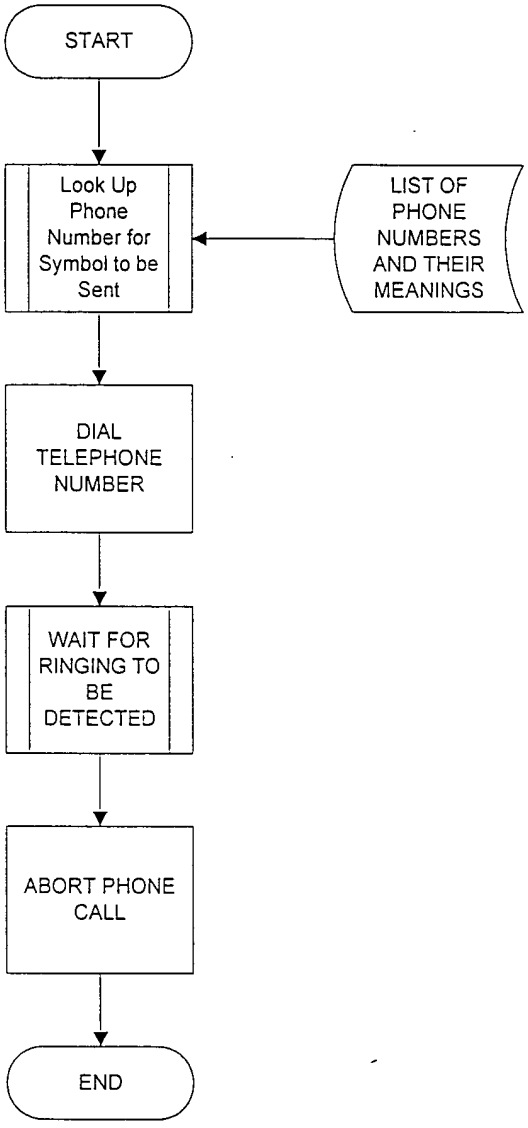

FIG. 6

Flowchart depicting the primary location receiving a single element of a message.

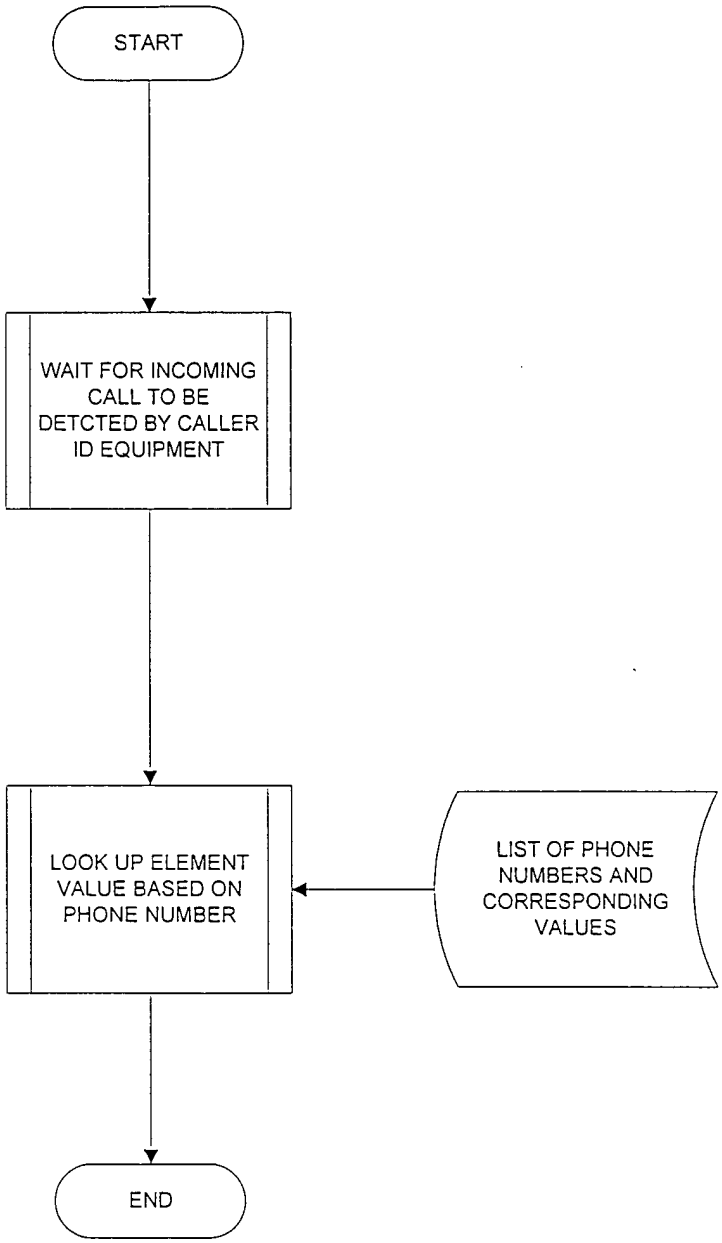

FIG. 7

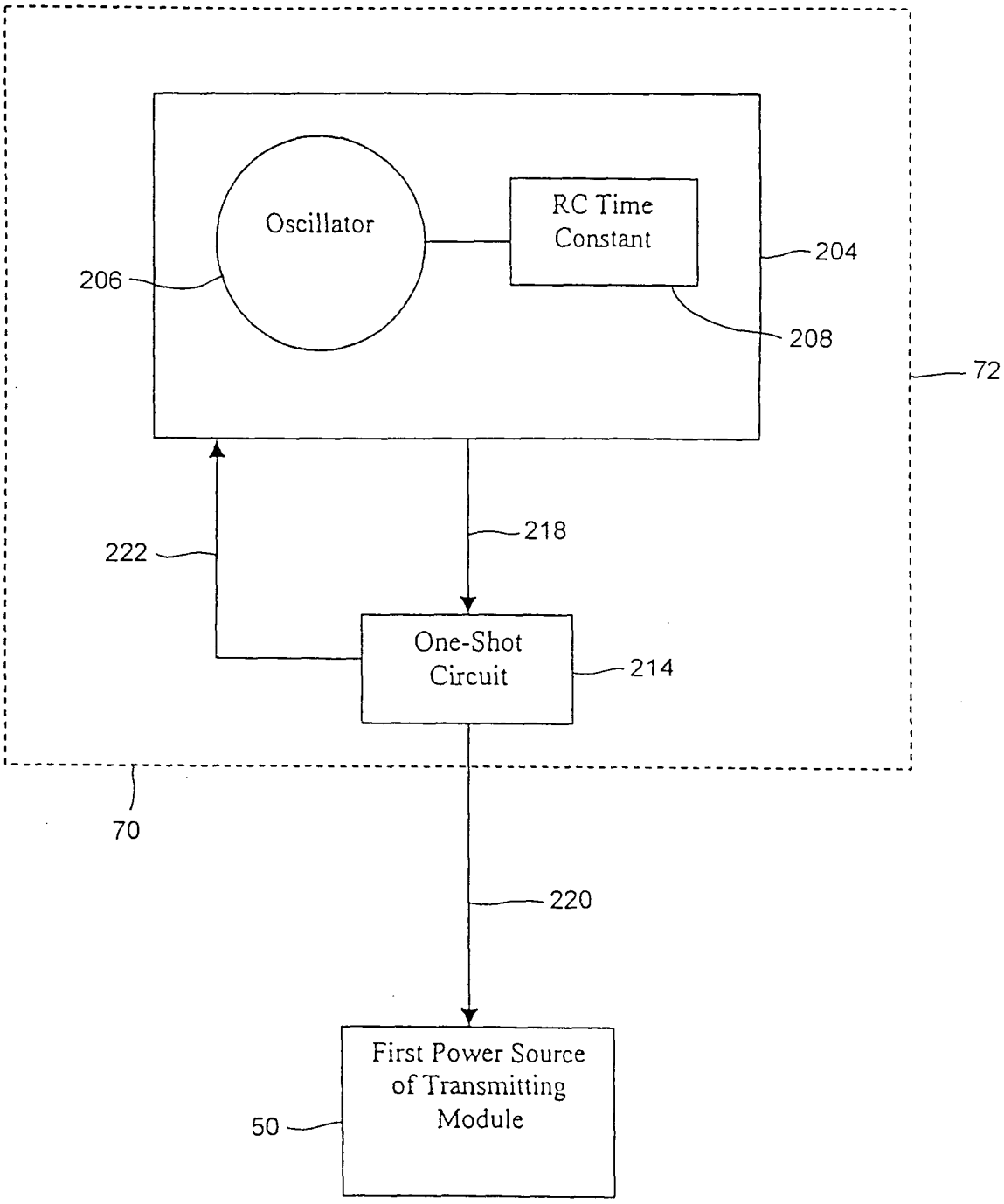
Oscillator
RC Time Constant
206
204
208
72
218
222
One-Shot Circuit
214
70
220
First Power Source of Transmitting Module
50

FIG. 8

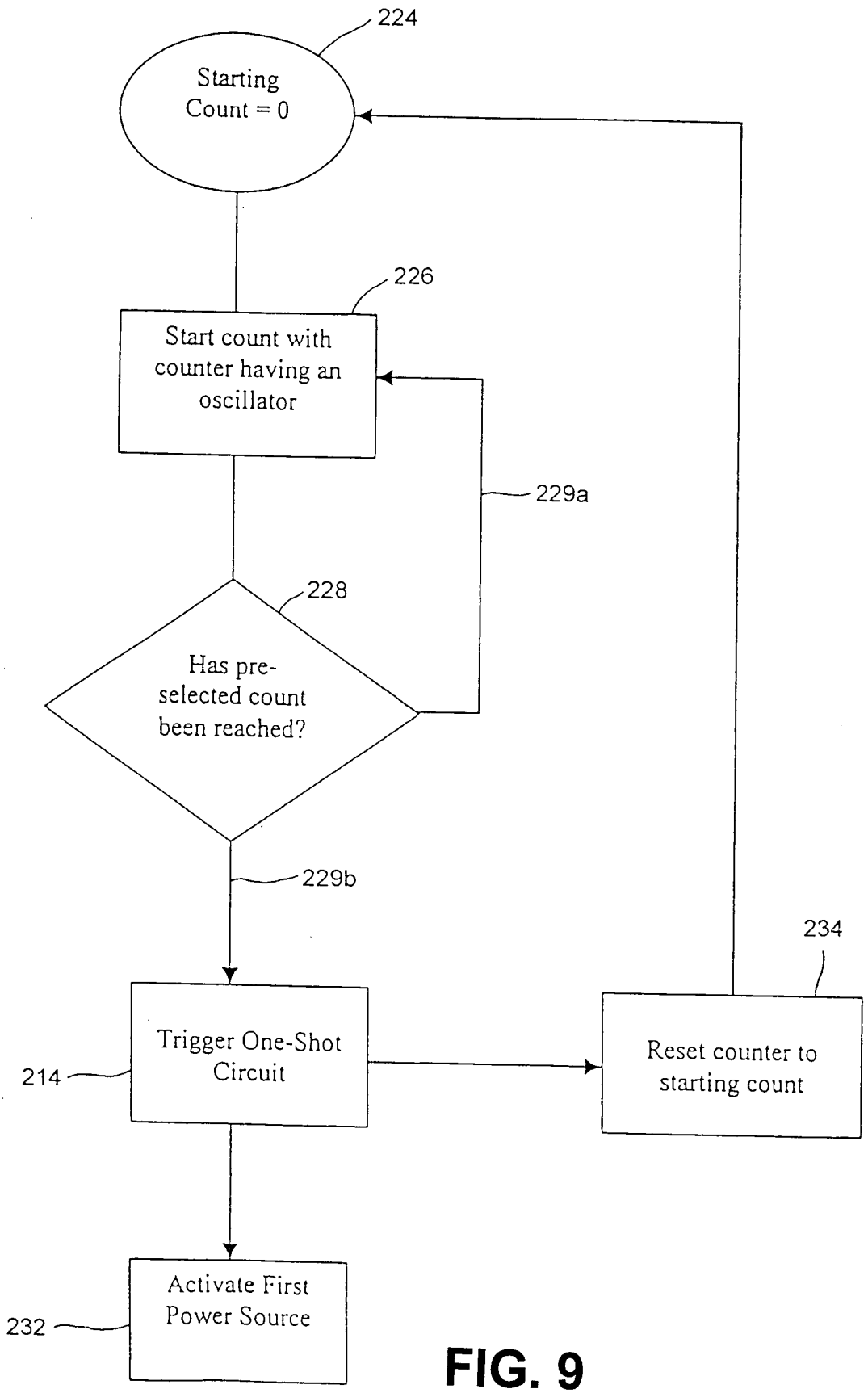
224
Starting
Count = 0
226
Start count with
counter having an
oscillator
229a
228
Has pre-
selected count
been reached?
229b
234
Trigger One-Shot
Circuit
214
Reset counter to
starting count
Activate First
Power Source
232

FIG. 9

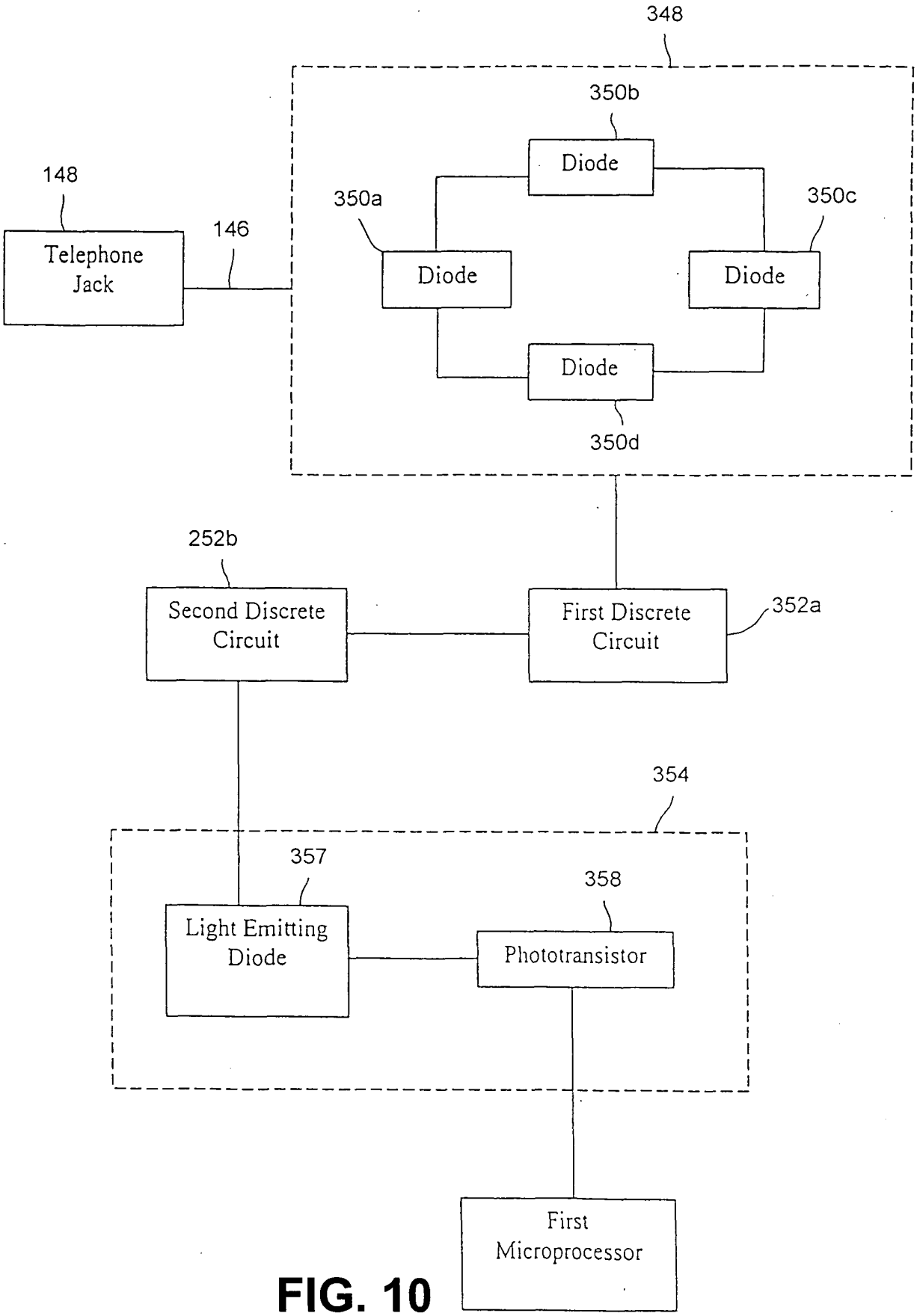
348
350b
Diode
148
350a
350c
146
Telephone Jack
Diode
Diode
Diode
350d
252b
Second Discrete Circuit
First Discrete Circuit
352a
354
357
358
Light Emitting Diode
Phototransistor
First Microprocessor

FIG. 10